Each compartment is hydraulically connected to adjacent compartments but has distinct hydrologic characteristics such as flow direction and gradient. Although each compartment is connected hydraulically to adjacent compartments, the water-table divide restricts natural groundwater flow between them. The relation to adjacent compartments is such that if contamination occurs in one, it would not naturally move laterally to an adjacent compartment. Several compartments are approximated in Figure 8. It is important to note that, because of their small size, not all topographic undulations necessarily describe underlying groundwater compartments. Some groundwater divides defining very small compartments may disappear during periods of water table decline.

Within a slope-aquifer system the behavior of contaminated water from a waste site or spill can be reasonably approximated where natural conditions exist. Where the natural flow of contaminated water reaches a cone of depression surrounding a pumping well, it may be expected to move toward the point of groundwater withdrawal. Even after pumping has ceased for months or years, some contaminated water may likely be trapped in fractures where natural groundwater circulation is restricted.

It is possible, although unusual, that an isolated fracture receiving recharge from one slope-aquifer system could extend beneath a boundary stream and intercept, or fall within, the area of pumping influence of a well in the neighboring slope-aquifer. In that case, the pumping well could have a hydraulic affect on the slope aquifer from which the fracture receives recharge, inducing flow toward the pumped well.

By identifying the slope-aquifer systems and their included compartments, and applying the generalizations, many useful deductions may be made regarding groundwater and the affect of human actions on it. As stated in the generalization, the stream, river, or lake serving as the lower hydraulic boundary is distinctive and the upper boundary is normally the topographic divide at the ridge top. The boundary defining the lateral extent of the system may be indistinct and somewhat arbitrary.

N-11 DEPTH OF CIRCULATION

The upper boundary of the zone of groundwater circulation, the water table, typically lies in the clayey soil-saprolite zone, except in upland areas of the Mountains where it may be in bedrock. The depth of circulation is difficult to define as it is determined by the presence of interconnected bedrock fractures. Although productive fractures have been penetrated at depths exceeding 700 feet, notably in the mountains, they are more likely to occur above a depth of 300-350 feet below bedrock surface.